

IN THE CLAIMS

1. (currently amended) A method of diagnosing non-small cell lung cancer (NSCLC) in a human, the method comprising assessing expression of the gene encoding DAP-kinase in lung cells of the human, whereby a lower degree of expression of the gene in the human[[,]] relative to a normal level of expression of the gene in humans not afflicted with NSCLC[[,]] is an indication that the human is afflicted with NSCLC.

2-42. (canceled)

43. (new) The method of claim 1 wherein expression of the gene is assessed *in vitro* in cells obtained from the human.

44. (new) The method of claim 43 wherein the cells are obtained from a bronchial lavage.

45. (new) The method of claim 43 wherein the cells are epithelial cells.

46. (new) The method of claim 1 wherein the human does not exhibit a macroscopic clinical symptom of NSCLC.

47. (new) The method of claim 46 wherein the symptom is selected from the group consisting of (a) a persistent cough which gets worse over time, (b) constant chest pain, (c) expectoration of blood, (d) shortness of breath, (e) wheezing, (f) hoarseness, (g) recurrent pneumonia, (h) recurrent bronchitis, (i) swelling of the neck and face, (j) loss of appetite, (k) weight loss, and (l) fatigue.

48. (new) The method of claim 1 wherein expression of the gene is assessed by assessing methylation of the gene.

49. (new) The method of claim 48 wherein methylation of the promoter CpG region is assessed.

50. (new) The method of claim 48 wherein methylation is assessed using a first oligonucleotide which specifically hybridizes to a methylated form of the gene.

51. (new) The method of claim 50 wherein a portion of the gene is amplified by a polymerase chain reaction using the first oligonucleotide and a second oligonucleotide.

52. (new) A method of assessing NSCLC tumorigenesis at an early stage in a human comprising assessing methylation of the gene encoding DAP-kinase in lung cells of the human.

53. (new) A method of assessing aggressiveness of a NSCLC tumor in a human comprising assessing methylation of the gene encoding DAP-kinase in lung cells of the human, whereby a higher degree of methylation of the gene is an indication that the tumor is aggressive.

54. (new) The method of claim 53 wherein the tumor is a diagnostic stage I NSCLC tumor.

55. (new) The method of claim 53 further comprising the step of selecting among methods of treating the NSCLC tumor, wherein a more aggressive treatment is selected if a higher degree of methylation is detected.

56. (new) A method of assessing the risk that a human will develop NSCLC comprising assessing methylation of the gene encoding DAP-kinase in lung cells of the human, wherein a lower degree of expression of the gene in the human relative to a normal level of expression of the gene in humans not afflicted with NSCLC is an indication that the human is at an increased risk for developing NSCLC.

57. (new) A method of assessing whether a test compound is useful for inhibiting a process selected from the group consisting of (1) NSCLC tumorigenesis, (2) progression of a NSCLC tumor, and (3) aggressiveness of a NSCLC tumor comprising comparing methylation of the DAP-kinase gene in the presence of the test compound with methylation of the DAP-kinase gene in the absence of the test compound, wherein a lower degree of methylation in the presence of the test compound is an indication that the test compound is useful for inhibiting the process.